

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

EASTWOOD, Simon C.
STEVENS HEWLETT & PERKINS
1 St. Augustine's Place
Bristol BS1 4UD
GRANDE BRETAGNE

27 JUL 2001

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing
(day/month/year)

25.07.2001

Applicant's or agent's file reference
SCE/4514-PCT

IMPORTANT NOTIFICATION

International application No.
PCT/GB00/01652

International filing date (day/month/year)
28/04/2000

Priority date (day/month/year)
30/04/1999

Applicant

ALCAN INTERNATIONAL LIMITED.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Fabiani, I

Tel. +49 89 2399-8022



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SCE/4514-PCT	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/01652	International filing date (day/month/year) 28/04/2000	Priority date (day/month/year) 30/04/1999	
International Patent Classification (IPC) or national classification and IPC C08K3/34			
Applicant ALCAN INTERNATIONAL LIMITED.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 06/09/2000	Date of completion of this report 25.07.2001
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>	Authorized officer Van de Panne, V Telephone No. +49 89 2399 8405



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/01652

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-15 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/01652

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 2, 4-13
	No:	Claims 1, 3, 14, 15
Inventive step (IS)	Yes:	Claims
	No:	Claims 2, 4-13
Industrial applicability (IA)	Yes:	Claims 1-15
	No:	Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/01652

I The following documents (D) are referred to in this Report:

D1 EP-A 459 472

D2 WO 97/30950

II The subject-matter of claims 1, 3, 14 and 15 lacks novelty having regard to the disclosure of D1. This document discloses the addition of a nano-clay to a polyimide polymer and mentions that the polymer may also contain fillers and flame retardants. The content of nano-clay is up to 50 wt% based on the compositions, with values of up to 18 wt% being disclosed in the working examples. See D1, claims 1, 5, 6 and 7, page 3 lines 41-45 and 50-52. It is noted that according to the present application inert fillers will cooperate with the nano-clay so as to create a coherent char; the expression "synergistic flame retardant additive combination" does not seem to imply any particular selection. As nano-clay is known to help in char formation of polyimides, see page 3 lines 6-9 of the present application, the compositions of D1 as far as they contain a filler will form a coherent char and thus anticipate the compositions of the present claims 1, 3, 14 and 15.

III For the discussion of inventive step, it is important to determine whether it has been made plausible that a synergistic effect occurs. It is noted that in the only working example in which an onium-ion intercalated clay alone is used, namely the formulation EVA046 of working example 1, (a) the clay content is about a third of the content in the samples representing the invention as claimed, and (b) the clay is not well dispersed so that one cannot speak of a true nanocomposite of clay and polymer. The fact that much better results are obtained with the composition EVA047 is not necessarily due to any synergism but can also be explained by the much larger amount of clay and the better dispersion thereof in the polymer matrix. Synergy has not been made plausible.

It is further noted that calling an organoclay with a bulky cation intercalated between the layers a "nano-clay" does not mean that all polymer compositions in which such a clay is incorporated will automatically be nanocomposites. In a true nanocomposite which has the advantages mentioned in D1 and D2, the clay should be dispersed at a molecular level, as set out in D1 page 3 lines 41-47.

IV The closest prior art is D2, disclosing that incorporation in a polymer of an organoclay with a bulky cation intercalated between the layers provides polymer compositions with improved ignition resistance and anti-drip properties, in addition to

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/01652

other valuable properties. As the presence of a synergistic effect has not been made plausible, the presently claimed invention merely solves the problem of extending the teaching of D2. The addition of fillers and flame retardants to polymer compositions is quite conventional, as evidenced by D1, and a person skilled in the art who has to solve the problem outlined above will be led to add a filler and/or a flame retardant to the compositions of D2. The fillers mentioned in the present claims 4, 5, 9 and 10 are very well known and their selection does not imply an inventive activity. The selection of suitable amounts of second filler and organoclay with respect to the flame retardant and non-drip effect will be a matter of routine experimentation. The subject-matter of claims 2 and 4-13 thus does not involve an inventive step.

V In claim 2 a tradename is used as the sole characterising feature. This is in general not acceptable and certainly not in a case where an adequate definition in chemical terminology is available. It is moreover noted that the tradename encompasses sodium montmorillonite, which cannot be incorporated in a polymer so as to form a nanocomposite.

VI The wording of claim 14 is not clear. Does the wording imply that the combination of nano-clay and second filler promotes the char formation, in which case the subject-matter of claim 14 merely duplicates claim 1, or is the claim directed to a master-batch which should be mixed with a further polymer?
